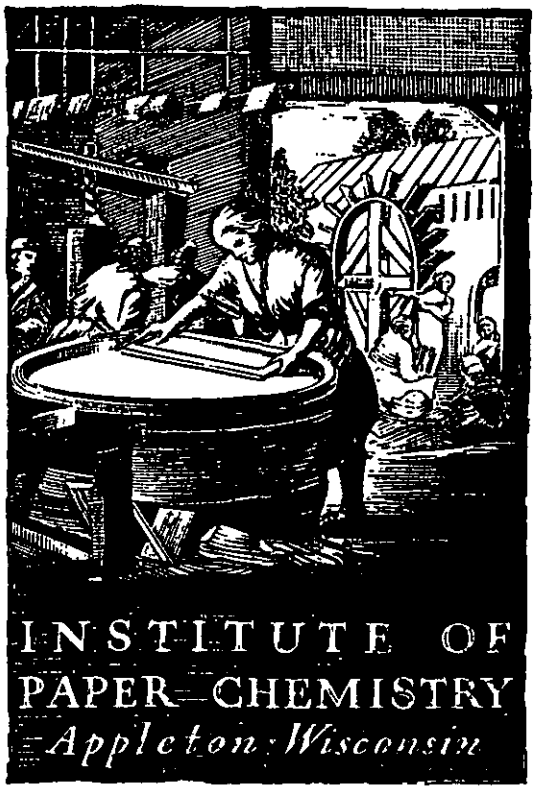


CONTINUOUS BASELINE STUDY

Project 1108-B

Progress Report Fifteen

to

FOURDRINIER KRAFT BOARD INSTITUTE

October 1, 1948

THE INSTITUTE OF PAPER CHEMISTRY

APPLETON, WISCONSIN

CONTINUOUS BASELINE STUDY

Project 1108-B

Progress Report 15

to

FOURDRINIER KRAFT BOARD INSTITUTE

October 1, 1948

THE INSTITUTE OF PAPER CHEMISTRY

APPLETON, WISCONSIN

In conjunction with the F.K.I. Continuous Baseline Study, fifty-one different sample lots of 42-lb. Fourdrinier kraft linerboard were submitted by eight different F.K.I. mills to The Institute of Paper Chemistry for testing during the period September 1 through September 30. In addition to the 42-lb. kraft linerboard, three samples of special drum stock were also submitted for evaluation. The results on the special stock are reported separately in this report. A tabulation of the number of samples classified according to mill may be seen in Table I.

TABLE I

DISTRIBUTION OF 42-LB. LINERBOARD SAMPLES

Mill Code	Samples Submitted
A	5
B	9
C	5
D	3
E	0
F	5
G	8
H	8
J	8
	51

The above sample lots were tested for basis weight, caliper, bursting strength, G. E. puncture, and Elmendorf tear. A comparison of the average strength results for each mill may be seen in Table II and

graphically presented in Figures 1 to 6, inclusive. In addition to a comparison of the mill averages, Table II also shows the cumulative F.K.I. averages and the F.K.I. indexes. The cumulative F.K.I. averages include all the results up to but not including the current period; the current period in the case of this report is September 1 through September 30. The F.K.I. index is obtained as follows:

$$\frac{\text{current F.K.I. average}}{\text{cumulative F.K.I. average}} \times 100 = \text{F.K.I. index (\%)}$$

The F.K.I. index furnishes a ready means of comparing the current quality with previous results. For example, the current F.K.I. average basis weight is 43.0 lb., whereas the cumulative F.K.I. average basis weight is 43.1. The index for basis weight determined in per cent as indicated above is 99.8%. This signifies that the current average basis weight is approximately 0.2% lower than the cumulative average which, in this case, covered the period from July 25, 1947, through August 31, 1948.

A comparison of the results in Table II and Figure 1 shows that the average basis weight for all mills submitting samples is above the 42-lb. specification set forth in Rule 41, with the exception of Mill J which has an average basis weight of 41.8. Mill D has the highest average basis weight, it being approximately 4.0% higher than the 42-lb. specification. The amount by which the mills exceed the 42-lb. specification is as follows:

Mill Code	Per cent
A	1.2
B	3.1
C	2.6
D	4.0
E	-
F	2.9
G	3.1
H	2.9
J	-0.5

A comparison of the average basis weight data for the previous period with the current F.K.I. average indicates that the basis weight is substantially the same.

A comparison of the average calipers for the various mills (see Figure 2) shows that the mill averages vary from a low of 13.4 for Mill J to a high of 15.4 for Mill F, the average being 14.5, which is below the cumulative average.

The average bursting strength values obtained for each mill are graphically shown in Figure 3. It may be observed that the average bursting strength for the various mills ranges from a low of 99 for Mill F to a high of 113 for Mill G. The current F.K.I. average bursting strength is 105, slightly higher than the cumulative average.

The data of Table II and Figure 4 show that the average G. E. puncture for all mills is 34 units, Mill J having the lowest value. In connection with Mill J, it may be observed that this mill had the lowest G. E. puncture during the last period.

A graphic comparison of the Elmendorf tear results for the various mills is given in Figures 5 and 6. The data of Table II show that Mill H has the highest average machine direction tear value, while Mill J has the lowest. Similarly, Mill A has the highest average across machine direction tear value while Mill J has the lowest. It may be noted that the current F.K.I. average machine direction and across-machine direction tear results are slightly lower than the cumulative averages.

A comparison of the F.K.I. indexes indicates that, for the current period, the test averages for basis weight, caliper, G. E. puncture, and machine and across machine direction Elmendorf tear are lower than the respective cumulative averages while the test average for bursting strength is higher than the cumulative average.

In order to compare the variation within a given mill, the test results for each particular mill have been tabulated in Tables III to XI for Mills A to J, respectively. In addition to the current averages, cumulative averages for each mill, together with the mill factor and mill index, are given for each mill. The cumulative mill average is the average test results obtained on the samples submitted by the particular mill up to, but not including, the current averages. The mill factor and the mill index are obtained as follows:

TABLE II

SUMMARY OF COMPOSITE MILL AVERAGES—SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948

Code No.	Basis Weight, lb.	Caliper, points	Bursting Strength, points	G. E. Puncture, units	Elmendorf Tear, g./sheet	
					In Direction	Across Direction
A	42.5	14.4	110	36	393	439
B	43.3	14.8	105	34	377	404
C	43.1	14.4	103	36	357	428
D	43.7	14.6	100	34	392	403
E	No samples submitted					
F	43.2	15.4	99	36	353	408
G	43.3	13.8	113	35	380	414
H	43.2	15.2	108	36	405	422
J	41.8	13.4	102	29	318	350
Current FKI Average:	43.0	14.5	105	34	372	409
Cumulative FKI Average:	43.1	15.0	103	39	386	417
FKI Index, %	99.8	96.7	101.9	87.2	96.4	98.1

$$\frac{\text{current mill average}}{\text{cumulative mill average}} \times 100 = \text{mill factor (\%)}$$

$$\frac{\text{current mill average}}{\text{cumulative F.K.I. average}} \times 100 = \text{mill index (\%)}$$

The mill factor and the mill index serve as a ready means for comparing the current mill results either with the previous result for that particular mill or with the cumulative F.K.I. results. As more samples are included and as the test data accumulate, the factors and indexes will have added significance. Since December, 1947, the reports have contained a comparison of the test data obtained at the mills with that obtained at The Institute of Paper Chemistry.

The results obtained on the special drum stock may be seen in Table XII.

In addition to the comparison of the test results between mills for the current period (September 1 through September 30), the F.K.I. current averages for periods 7 to 15 have been plotted in Figure 7. The reported periods, together with the number of samples involved in each reported period, are given in Table III.

TABLE III

Reported Period	Duration	No. of Samples
7	January 1 through January 31	68
8	February 1 through February 29	53
9	March 1 through March 31	66
10	April 1 through April 30	60
11	May 1 through May 31	64
12	June 1 through June 30	66
13	July 1 through July 31	53
14	August 1 through August 31	61
15	September 1 through September 30	51

It may be noted in Figure 7 that the F.K.I. current averages for the various periods did not vary materially. As a means of following the trends in the F.K.I. cumulative averages, the F.K.I. cumulative averages for each reported period have been plotted in Figure 8.

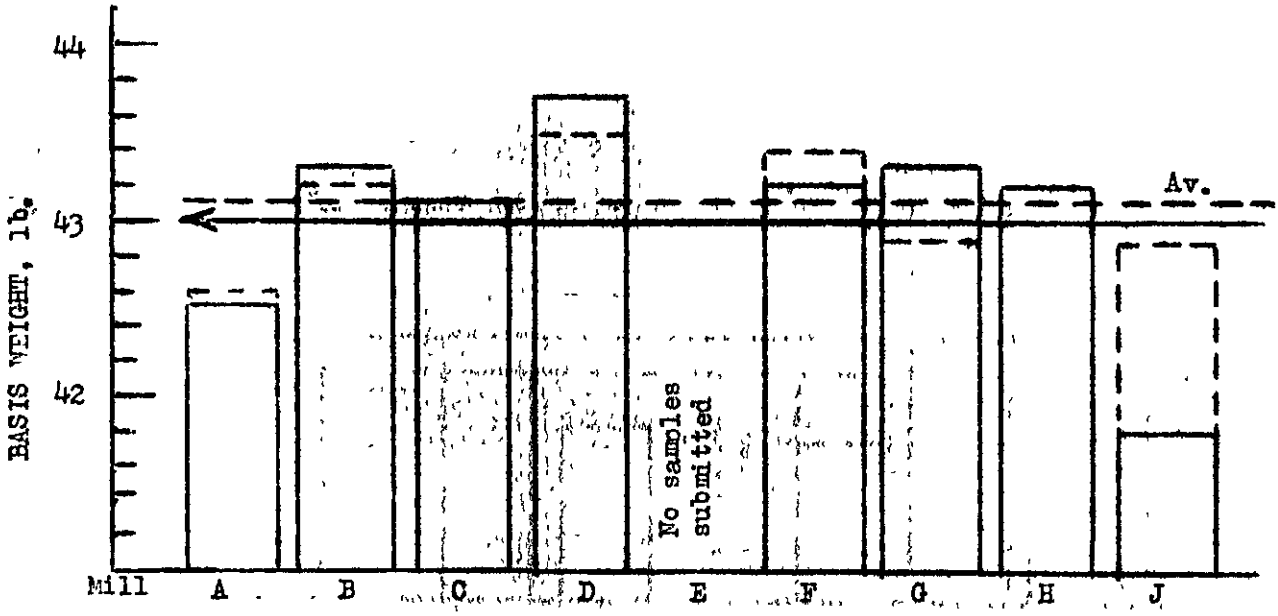
In order to compare the variation within a mill, the test results for each particular mill have been tabulated in Tables V to XIV for Mills A to J, respectively. In addition, the average test values for each mill for each reported period have been plotted in Figures 9 to 17 for Mills A to J, respectively. The number of samples submitted by each mill in each period are given in Table IV.

TABLE IV

Number of Samples per Mill

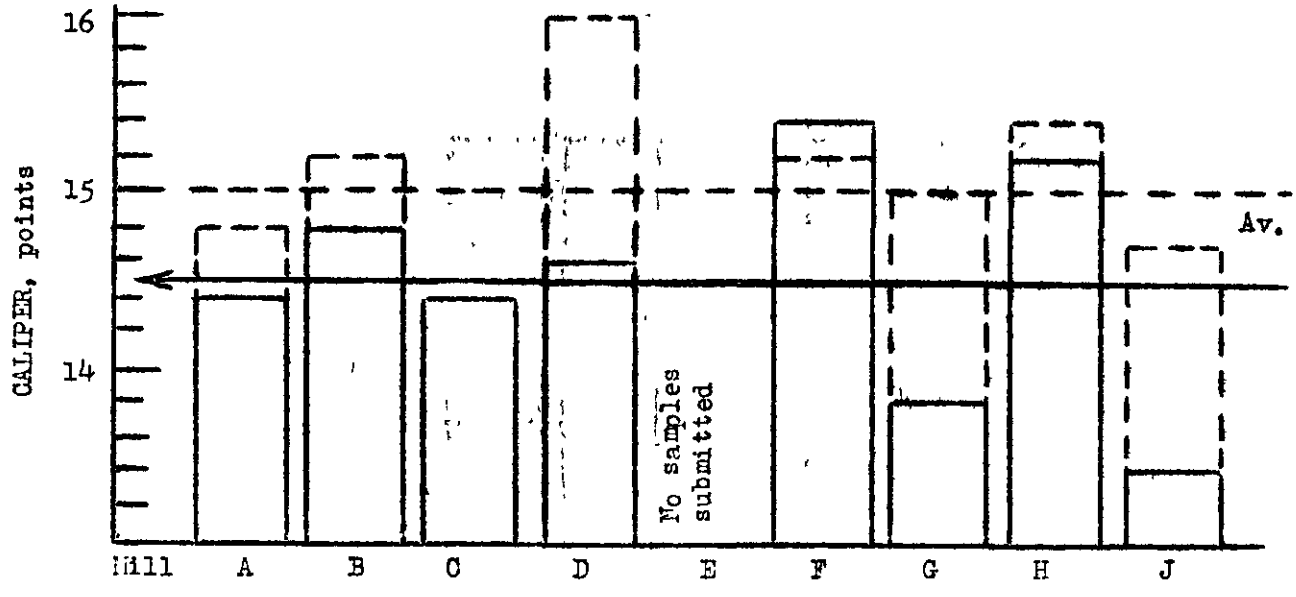
Reported Period	A	B	C	D	E	F	G	H	J
7	9	12	6	9	1	6	7	10	8
8	7	9	5	3	0	7	8	6	8
9	10	11	8	3	2	8	9	5	10
10	6	15	6	5	1	6	8	7	6
11	8	13	8	5	1	5	10	6	8
12	7	12	7	4	1	8	10	9	8
13	6	10	7	0	0	4	10	9	7
14	6	11	8	5	0	7	8	7	9
15	5	9	5	3	0	5	8	8	8
Totals	64	102	60	37	6	56	78	67	72

FIGURE 1



COMPARISON OF BASIS WEIGHT RESULTS
(Period Sept. 1 - Sept. 30).

FIGURE 2

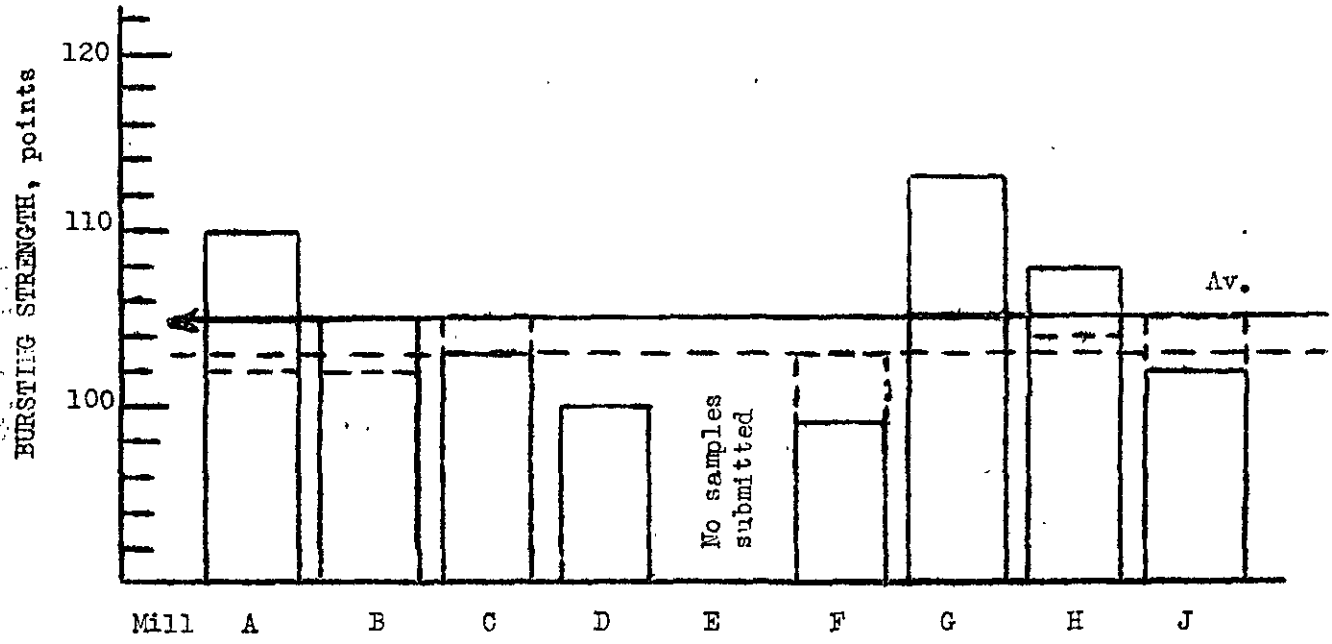


COMPARISON OF CALIPER RESULTS
(Period Sept. 1 - Sept. 30)

——— Current Mill Average

– – – – Cumulative Mill Average

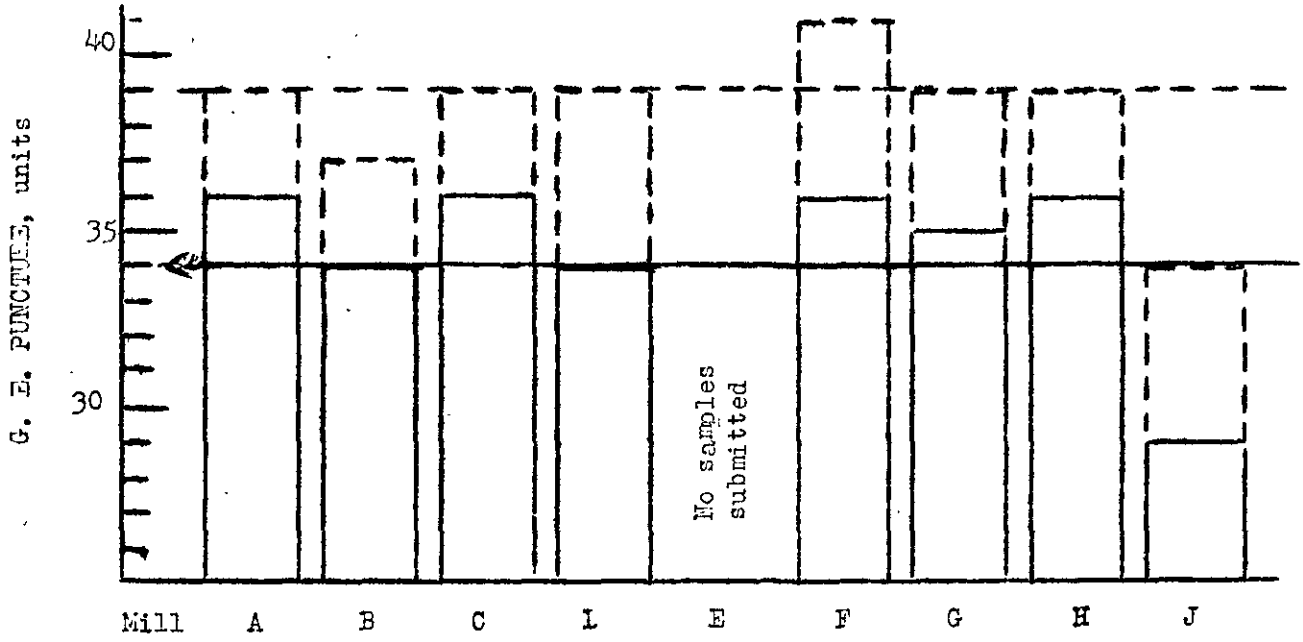
FIGURE 3



COMPARISON OF BURSTING STRENGTH RESULTS

(Period Sept. 1 - Sept. 30)

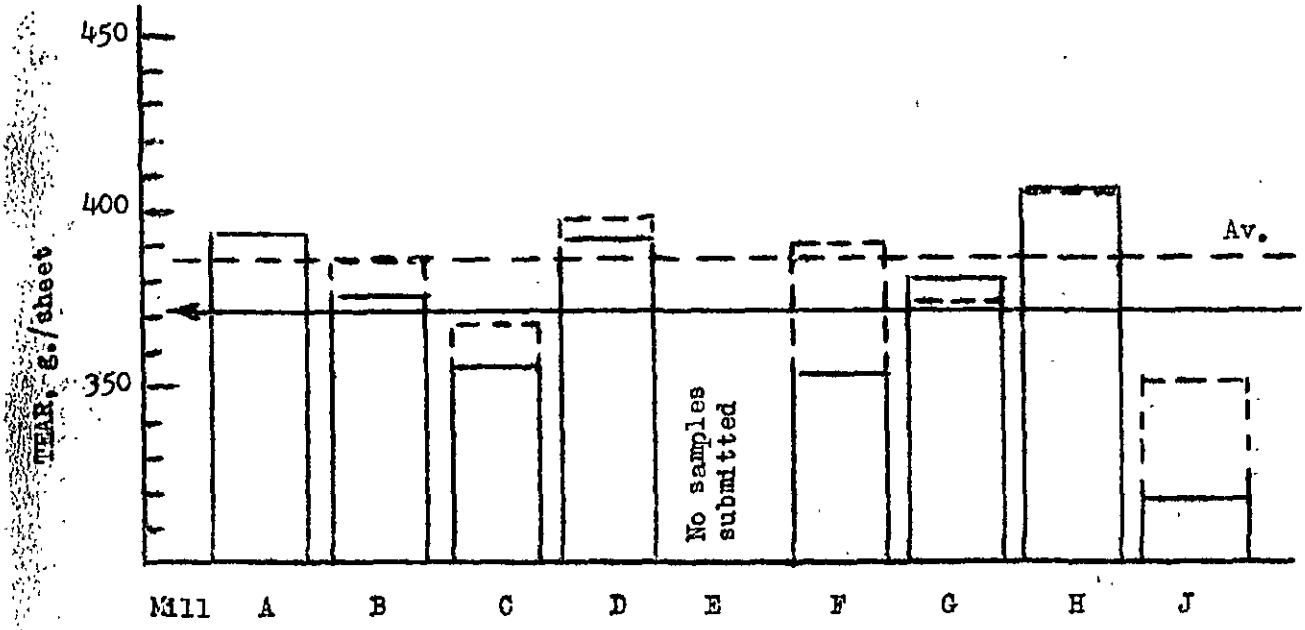
FIGURE 4



COMPARISON OF G. E. PUNCTURE RESULTS

(Period Sept. 1 - Sept. 30)

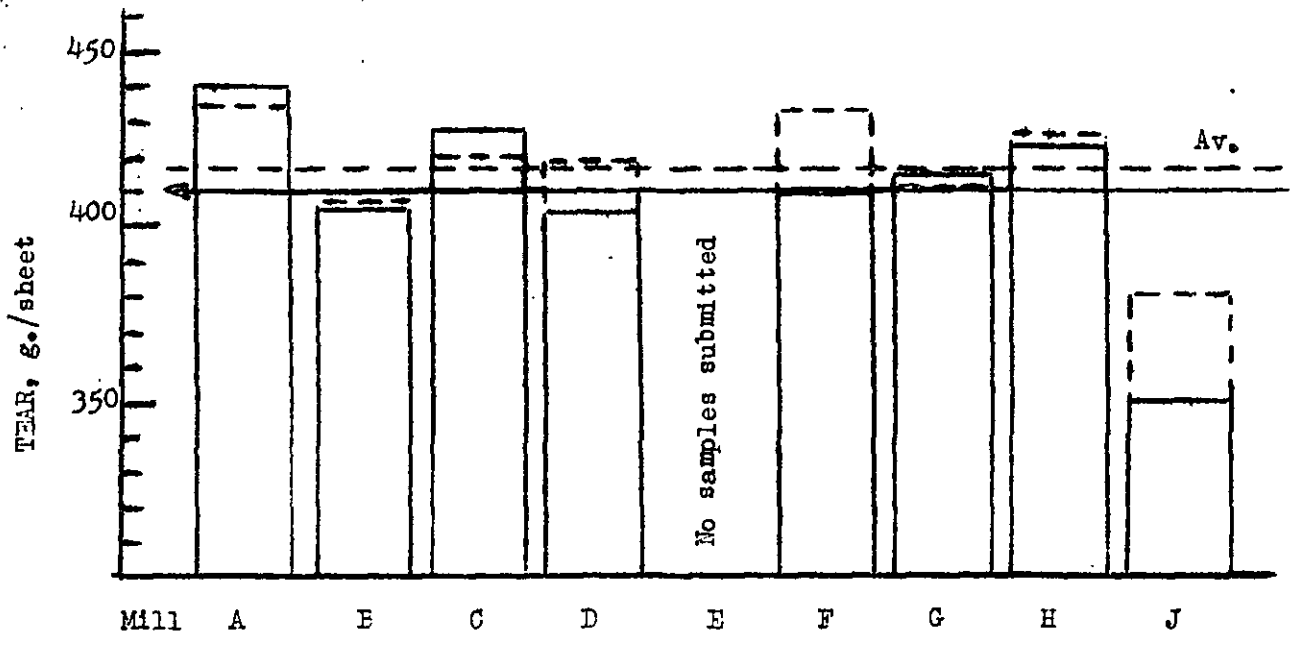
FIGURE 5



COMPARISON OF TEAR RESULTS, machine direction

(Period Sept. 1 – Sept. 30)

FIGURE 6



COMPARISON OF TEAR RESULTS, across machine direction

(Period Sept. 1 – Sept. 30)

Figure 7

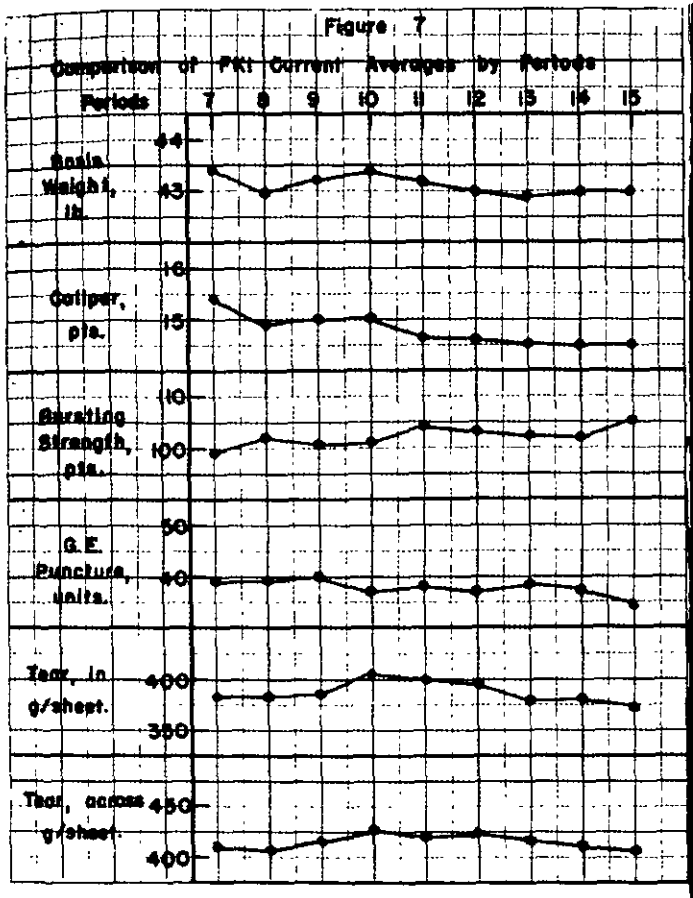


Figure 8

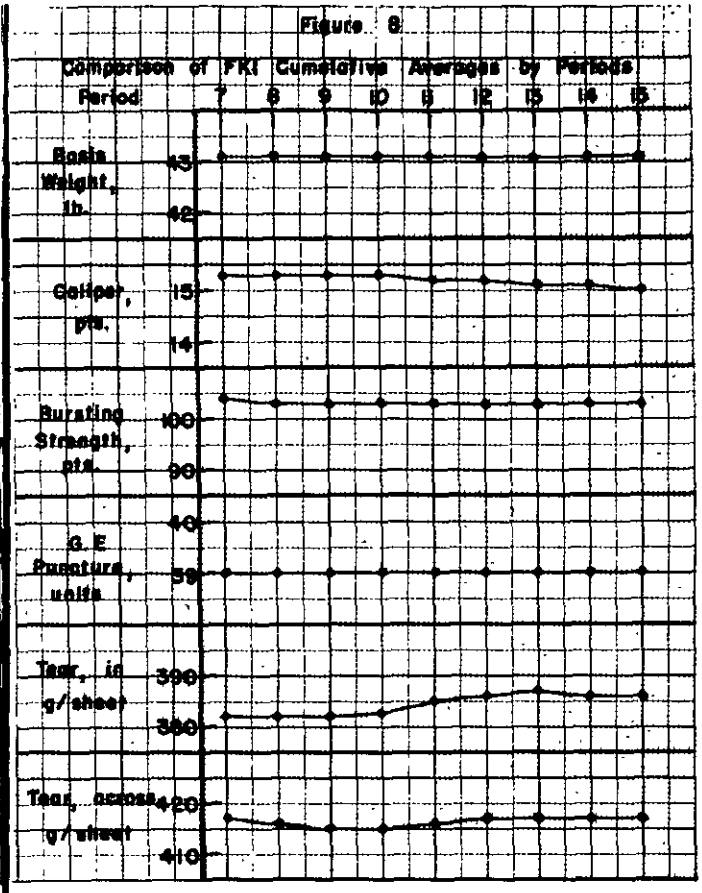


Figure 9

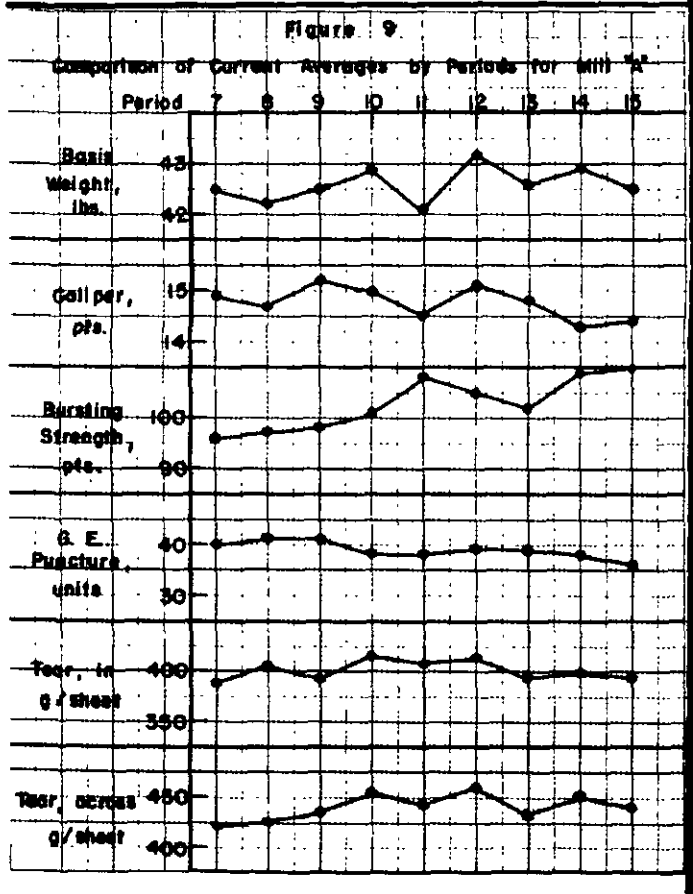


Figure 10

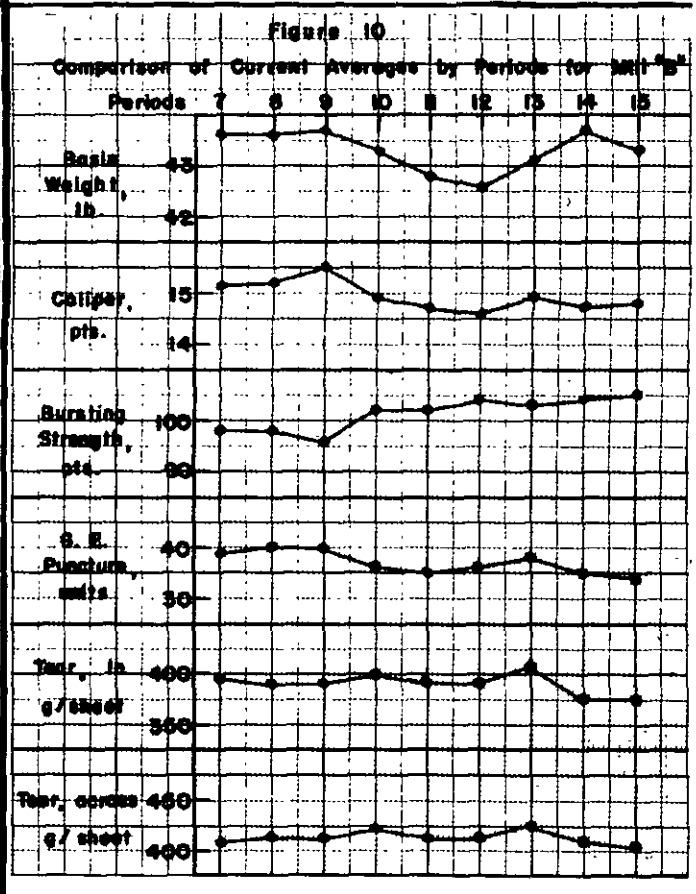


Figure 11

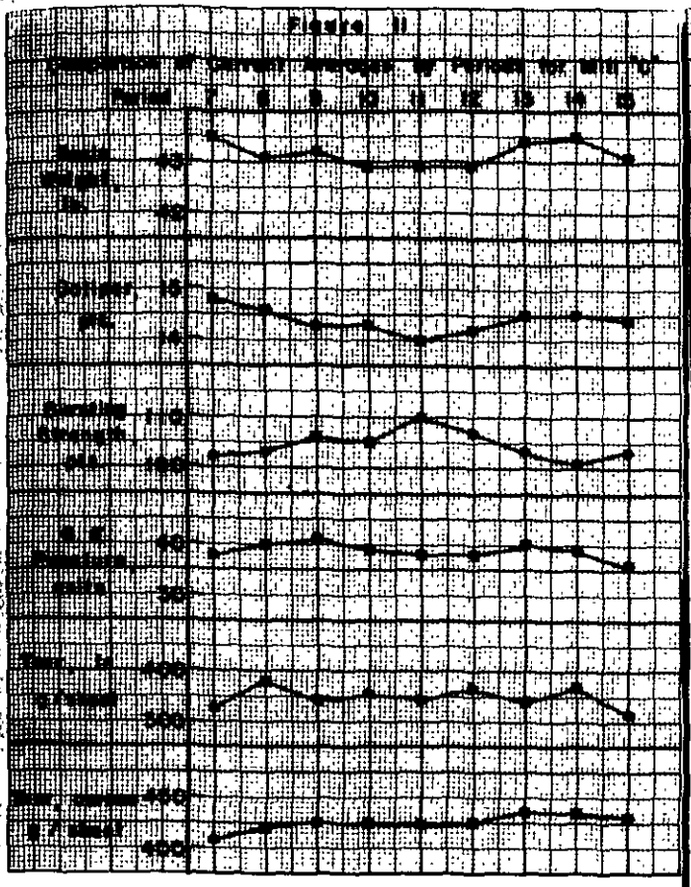


Figure 12

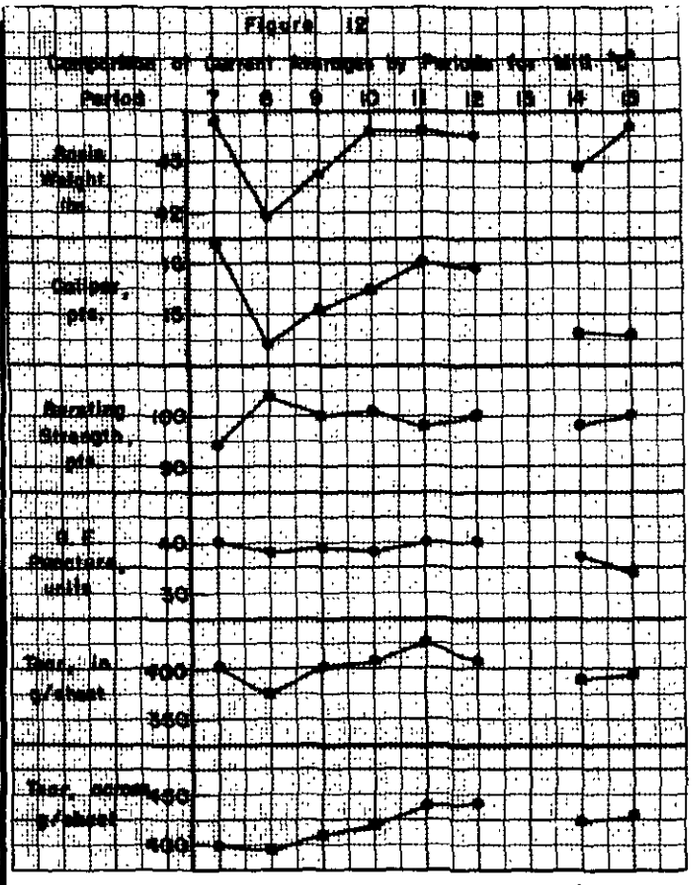


Figure 13

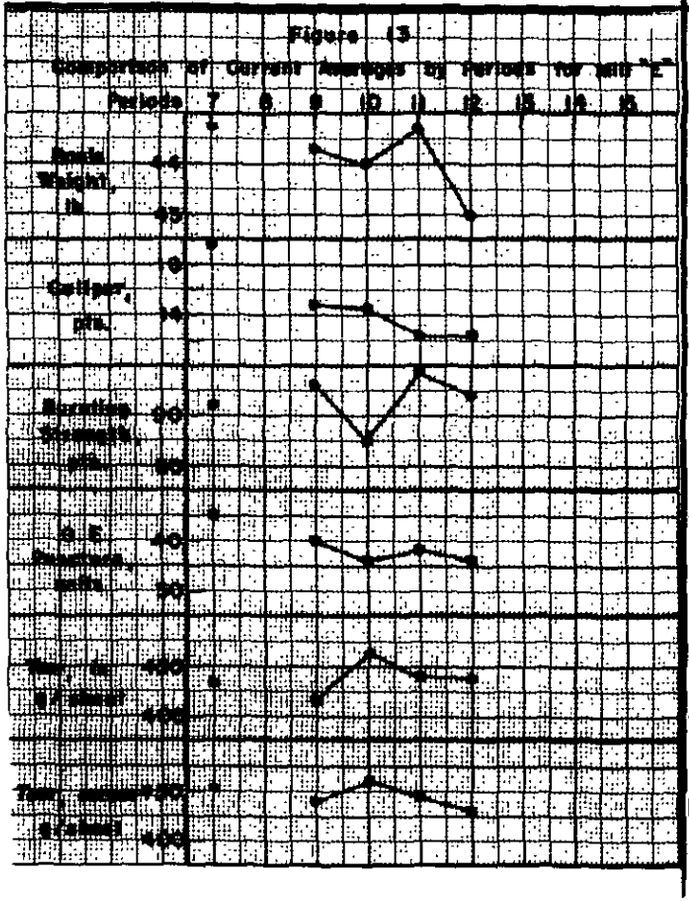
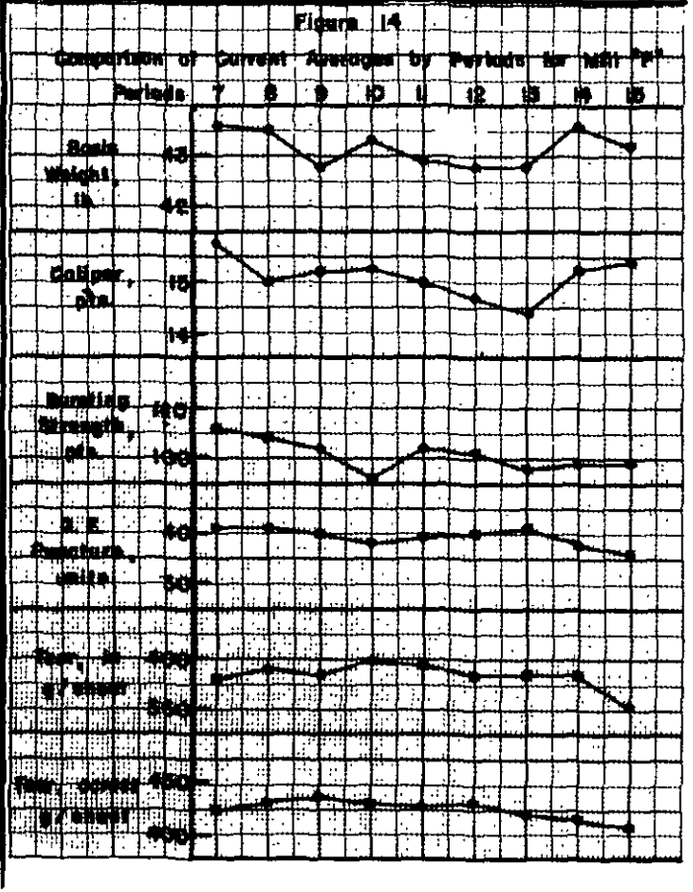
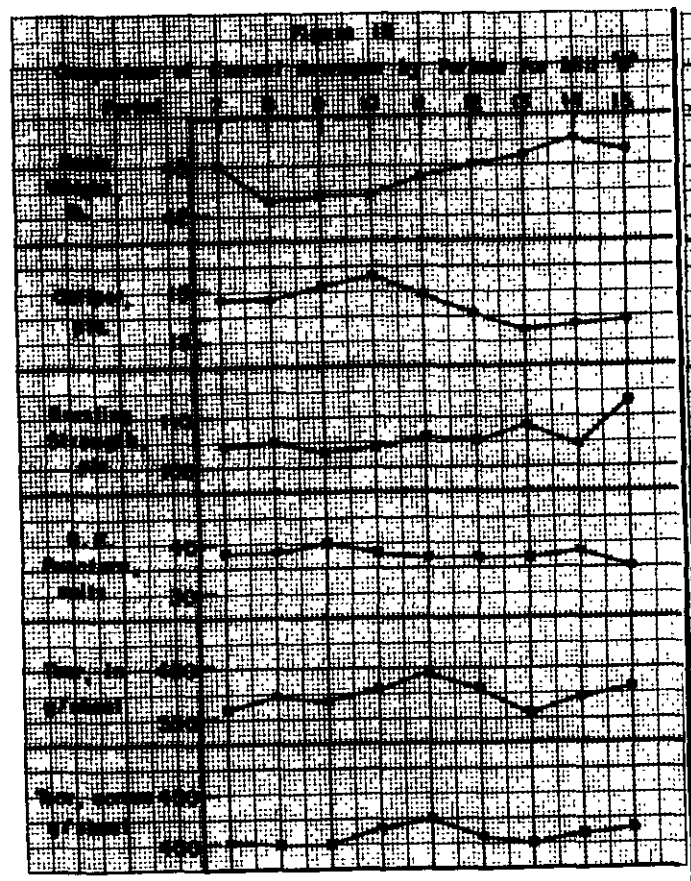
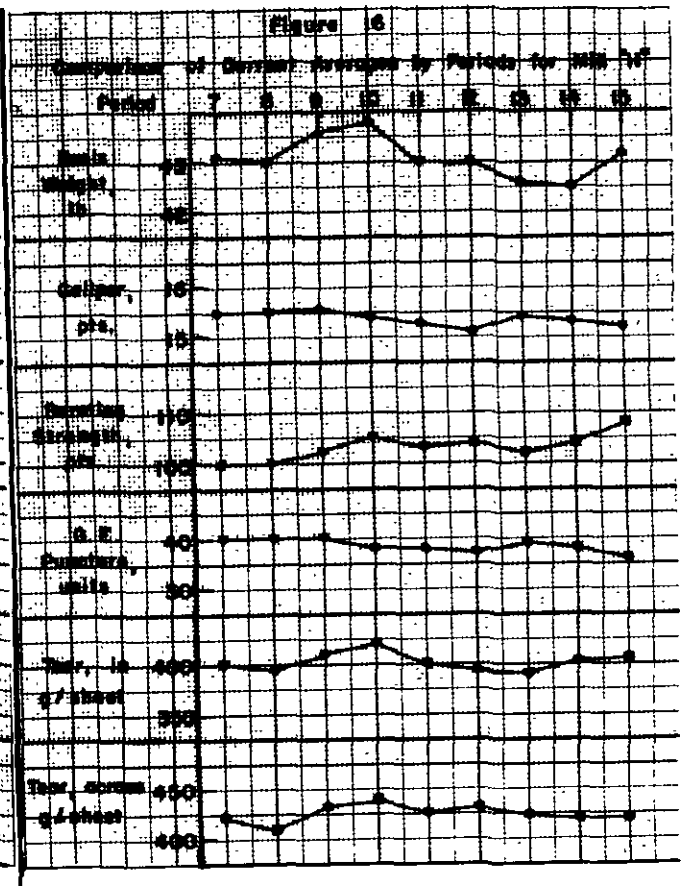


Figure 14







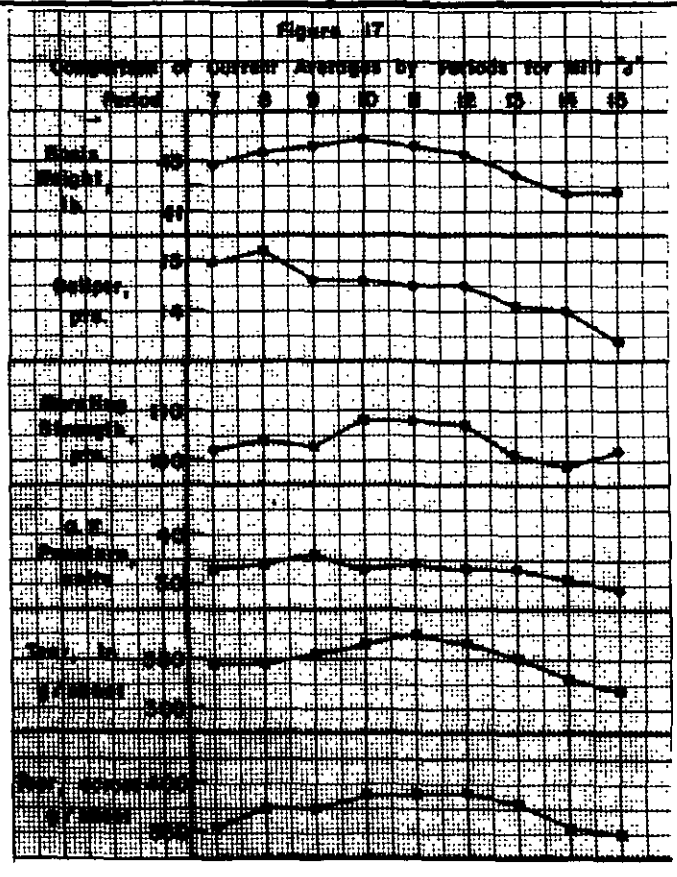


TABLE V

SUMMARY OF INDIVIDUAL TEST LOTS—SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948

te le	Mch. No.	Basis Weight, lb. Max.	Min.	Av.	Caliper, points Max.	Min.	Av.	Bursting Strength, points Max.	Min.	Av.	G. E. Puncture, units Max.	Min.	Av.	Elmendorf Tear, g./sheet In Max.	Min.	Av.	Across Max.	Min.	Av.
								Mill A — 42-lb. Linerboard											
)/48	1	43.4	41.0	42.0	15.0	12.7	13.8	130	85	110	40	33	36	424	328	380	472	416	439[a]
'48	1	44.6	42.0	43.2	15.4	13.2	14.2	135	96	113	43	34	37	448	376	411	504	400	465[a]
;/48	1	43.4	39.6	42.0	15.7	14.0	14.7	128	81	105	38	31	35	432	288	387	488	408	439[a]
;/48	1	44.6	42.0	43.2	15.5	13.1	14.5	138	95	110	38	32	36	456	247	382[a]	480	360	423[a]
)/48	1	43.6	40.2	42.1	15.0	14.0	14.7	125	85	110	36	32	35	488	376	404[a]	480	384	429[a]
				42.5			14.4			110			36			393			439
				42.6			14.8			102			39			393			434
				99.8			97.3			107.8			92.3			100.0			101.2
				98.6			96.0			106.8			92.3			101.8			105.3

ıe readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE V

SUMMARY OF INDIVIDUAL TEST LOTS—SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948

File No.	Mill Code	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, points			G. E. Puncture, units			In	
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.
								Mill A — 42-lb. Linerboard										
133668	A-67	9/3/48	8/30/48	1	43.4	41.0	42.0	15.0	12.7	13.8	130	85	110	40	33	36	424	328
133680	A-68	9/4/48	9/1/48	1	44.6	42.0	43.2	15.4	13.2	14.2	135	96	113	43	34	37	448	376
133759	A-69	9/16/48	9/13/48	1	43.4	39.6	42.0	15.7	14.0	14.7	128	81	105	38	31	35	432	288
133787	A-70	9/18/48	9/15/48	1	44.6	42.0	43.2	15.5	13.1	14.5	138	95	110	38	32	36	456	247
133834	A-71	9/22/48	9/20/48	1	43.6	40.2	42.1	15.0	14.0	14.7	125	85	110	36	32	35	488	376
Current Mill Average:							42.5			14.4			110			36		
Cumulative Mill Average:							42.6			14.8			102			39		
Mill Factor, %							99.8			97.3			107.8			92.3		
Mill Index, %							98.6			96.0			106.8			92.3		

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE VI

SUMMARY OF INDIVIDUAL TEST LOTS—SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948—continued

e	Mch.	Basis Weight, lb.			Caliper, points			Bursting Strength, points			G. E. Puncture, units			Elmendorf Tear, g./sheet					
														In			Across		
e	No.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
							Mill B — 42-lb. Liner	board											
/48	1	45.4	41.6	43.3	15.6	13.8	15.0	133	78	107	34	28	32	432	320	365[a]	400	344	373[a]
/48	3	45.4	42.0	43.5	15.4	13.2	14.4	116	90	103	39	31	35	400	312	353[a]	448	368	407[a]
/48	3	44.2	41.6	43.3	15.8	13.2	14.9	122	94	105	37	32	35	448	320	370	472	384	421[a]
48	3	44.0	40.2	41.8	14.7	13.3	13.8	120	91	106	37	30	34	400	304	369	448	352	399[a]
48	1	46.0	42.2	43.8	16.0	13.9	15.1	115	90	104	37	32	34	416	368	393[a]	440	384	413[a]
48	3	45.6	43.0	44.0	15.4	14.0	14.7	120	84	104	34	28	32	416	320	369[a]	504	352	409[a]
48	3	45.0	42.0	43.3	15.5	13.3	14.6	128	95	106	38	32	36	496	360	422[a]	464	352	417[a]
48	1	45.6	42.0	43.6	16.5	14.6	15.6	119	90	102	38	32	35	432	376	403[a]	432	368	403[a]
/48	3	44.6	41.0	42.7	15.4	14.0	14.8	117	87	105	34	28	31	464	280	351	464	336	394[a]
				43.3			14.8			105			34			377			404
				43.2			15.2			102			37			385			407
				100.2			97.4			102.9			91.9			97.9			99.3
				100.5			98.7			101.9			87.2			97.7			96.9

readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE VI

SUMMARY OF INDIVIDUAL TEST LOTS—SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948—continue

File No.	Mill Code	Date Recd.	Date Made	Mch. No.	Basis Weight, lb. Max.	Basis Weight, lb. Min.	Basis Weight, lb. Av.	Caliper, points. Max.	Caliper, points. Min.	Caliper, points. Av.	Bursting Strength, points Max.	Bursting Strength, points Min.	Bursting Strength, points Av.	G. E. Puncture, units Max.	G. E. Puncture, units Min.	G. E. Puncture, units Av.	In Max.	In Min.
								Mill B — 42-lb. Linerboard										
133647	B-92	9/1/48	8/23/48	1	45.4	41.6	43.3	15.6	13.8	15.0	133	78	107	34	28	32	432	320
133648	B-93	9/1/48	8/23/48	3	45.4	42.0	43.5	15.4	13.2	14.4	116	90	103	39	31	35	400	312
133698	B-94	9/7/48	8/31/48	3	44.2	41.6	43.3	15.8	13.2	14.9	122	94	105	37	32	35	448	320
133699	B-95	9/7/48	9/1/48	3	44.0	40.2	41.8	14.7	13.3	13.8	120	91	106	37	30	34	400	304
133700	B-96	9/7/48	9/1/48	1	46.0	42.2	43.8	16.0	13.9	15.1	115	90	104	37	32	34	416	368
133775	B-97	9/17/48	9/8/48	3	45.6	43.0	44.0	15.4	14.0	14.7	120	84	104	34	28	32	416	320
133776	B-98	9/17/48	9/9/48	3	45.0	42.0	43.3	15.5	13.3	14.6	128	95	106	38	32	36	496	360
133789	B-99	9/18/48	9/9/48	1	45.6	42.0	43.6	16.5	14.6	15.6	119	90	102	38	32	35	432	376
133886	B-100	9/27/48	9/15/48	3	44.6	41.0	42.7	15.4	14.0	14.8	117	87	105	34	28	31	464	280
Current Mill Average:							43.3			14.8			105			34		
Cumulative Mill Average:							43.2			15.2			102			37		
Mill Factor, %							100.2			97.4			102.9			91.9		
Mill Index, %							100.5			98.7			101.9			87.2		

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE VII

SUMMARY OF INDIVIDUAL TEST LOTS--SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948--continued

Date	Mch. No.	Basis Weight, lb. Max.	Basis Weight, lb. Min.	Basis Weight, lb. Av.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Bursting Strength, points Max.	Bursting Strength, points Min.	Bursting Strength, points Av.	G. E. Puncture, units Max.	G. E. Puncture, units Min.	G. E. Puncture, units Av.	Elmendorf Tear, g./sheet In Max.	Elmendorf Tear, g./sheet In Min.	Elmendorf Tear, g./sheet In Av.	Elmendorf Tear, g./sheet Across Max.	Elmendorf Tear, g./sheet Across Min.	Elmendorf Tear, g./sheet Across Av.
							Mill C — 42-lb. Linerboard												
/48	1	44.2	42.2	43.5	15.0	12.5	14.0	145	83	106	40	32	36	424	304	364	504	392	437[a]
48	1	42.4	41.4	41.9	14.5	11.2	13.9	118	72	97	38	32	35	384	288	345[a]	464	360	424[a]
/48	1	45.6	43.6	44.2	15.0	13.0	14.4	119	78	102	40	32	36	392	328	359[a]	504	384	425[a]
/48	1	42.4	40.4	41.6	15.3	12.8	14.5	116	83	100	38	32	35	400	272	355[a]	480	376	416[a]
/48	1	45.4	43.6	44.3	16.1	13.0	15.1	125	88	109	44	33	38	432	320	361	480	400	439[a]
				43.1			14.4			103			36			357			428
				43.0			14.4			105			39			368			420
				100.2			100.0			98.1			92.3			97.0			101.9
				100.0			96.0			100.0			92.3			92.5			102.6

TABLE VIII

							Mill D — 42-lb. Linerboard												
/48	4	44.8	43.4	44.1	15.8	13.0	14.5	114	75	98	38	32	34	392	336	370[a]	448	360	398[a]
/48	4	44.0	42.0	42.9	15.0	13.0	14.3	125	85	96	36	30	34	448	336	387[a]	424	328	383[a]
/48	4	45.4	42.8	44.2	16.5	14.0	15.1	145	85	107	36	32	35	480	360	419[a]	504	376	429[a]
				43.7			14.6			100			34			392			403
				43.5			16.0			100			39			397			419
				100.5			91.2			100.0			87.2			98.7			96.2
				101.4			97.3			97.1			87.2			101.6			96.6

readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE VII

SUMMARY OF INDIVIDUAL TEST LOTS--SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948--continued

File No.	Mill Code	Date Recd.	Date Made	Mch. No.	Basis Weight, lb. Max.	Basis Weight, lb. Min.	Basis Weight, lb. Av.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Bursting Strength, points Max.	Bursting Strength, points Min.	Bursting Strength, points Av.	G. E. Puncture, units Max.	G. E. Puncture, units Min.	G. E. Puncture, units Av.	Elmendorf, g./In Max.	Elmendorf, g./In Min.	Elmendorf, g./In Av.
								Mill C — 42-lb. Linerboard											
133701	C-62	9/7/48	8/31/48	1	44.2	42.2	43.5	15.0	12.5	14.0	145	83	106	40	32	36	424	304	364
133702	C-63	9/7/48	9/2/48	1	42.4	41.4	41.9	14.5	11.2	13.9	118	72	97	38	32	35	384	288	345
133788	C-64	9/18/48	9/13/48	1	45.6	43.6	44.2	15.0	13.0	14.4	119	78	102	40	32	36	392	328	359
133883	C-65	9/25/48	9/20/48	1	42.4	40.4	41.6	15.3	12.8	14.5	116	83	100	38	32	35	400	272	355
133901	C-66	9/28/48	9/23/48	1	45.4	43.6	44.3	16.1	13.0	15.1	125	88	109	44	33	38	432	320	361
Current Mill Average:							43.1			14.4			103			36			357
Cumulative Mill Average:							43.0			14.4			105			39			368
Mill Factor, %							100.2			100.0			98.1			92.3			97
Mill Index, %							100.0			96.0			100.0			92.3			92

TABLE VIII

								Mill D — 42-lb. Linerboard											
133667	D-39	9/3/48	8/30/48	4	44.8	43.4	44.1	15.8	13.0	14.5	114	75	98	38	32	34	392	336	370
133832	D-40	9/22/48	9/18/48	4	44.0	42.0	42.9	15.0	13.0	14.3	125	85	96	36	30	34	448	336	387
133833	D-41	9/22/48	9/19/48	4	45.4	42.8	44.2	16.5	14.0	15.1	145	85	107	36	32	35	480	360	419
Current Mill Average:							43.7			14.6			100			34			392
Cumulative Mill Average:							43.5			16.0			100			39			397
Mill Factor, %							100.5			91.2			100.0			87.2			98
Mill Index, %							101.4			97.3			97.1			87.2			101

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE IX

SUMMARY OF INDIVIDUAL TEST LOTS--SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948--continued

Mch. No.	Basis Weight, lb. Max.	Min.	Av.	Caliper, points Max.	Min.	Av.	Bursting Strength, points Max.	Min.	Av.	G. E. Puncture, units Max.	Min.	Av.	Elmendorf Tear, g./sheet In Max.	Min.	Av.	Across Max.	Min.	Av.
Mill E — 42-lb. Linerboard																		
No samples submitted																		

TABLE X.

Mill F — 42-lb. Linerboard																		
3 –	43.8	41.6	42.6	16.3	15.0	15.5	115	78	95	40	34	37	392	328	369	464	360	401[a]
3 –	44.0	42.0	42.9	16.4	14.7	15.6	107	81	94	38	32	36	376	320	348[a]	472	320	403[a]
3 –	45.0	42.6	44.0	17.0	14.5	15.8	108	80	94	40	32	35	400	264	326[a]	440	296	409[a]
3 –	44.0	41.2	43.0	15.7	14.1	14.9	123	95	107	37	32	35	384	320	354	456	392	411
3 –	44.4	41.0	43.4	16.2	14.5	15.4	119	85	104	38	32	36	400	328	367[a]	496	384	417[a]
			43.2			15.4			99			36			353			408
			43.4			15.2			103			41			390			432
			99.5			101.3			96.1			87.8			90.5			94.4
			100.2			102.7			96.1			92.3			91.5			97.8

readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE IX

SUMMARY OF INDIVIDUAL TEST LOTS--SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948--continued

File No.	Mill Code	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, points			G. E. Puncture, units			Elm In	
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.
Mill E — 42-lb. Linerboard																		
No samples submitted																		
TABLE X.																		
Mill F — 42-lb. Linerboard																		
133649	F-52	9/1/48	8/28/48	-	43.8	41.6	42.6	16.3	15.0	15.5	115	78	95	40	34	37	392	328
133650	F-53	9/1/48	8/28/48	-	44.0	42.0	42.9	16.4	14.7	15.6	107	81	94	38	32	36	376	320
133735	F-54	9/11/48	8/30/48	-	45.0	42.6	44.0	17.0	14.5	15.8	108	80	94	40	32	35	400	264
133804	F-55	9/20/48	9/11/48	-	44.0	41.2	43.0	15.7	14.1	14.9	123	95	107	37	32	35	384	320
133805	F-56	9/20/48	9/11/48	-	44.4	41.0	43.4	16.2	14.5	15.4	119	85	104	38	32	36	400	328
Current Mill Average:							43.2			15.4			99			36		
Cumulative Mill Average:							43.4			15.2			103			41		
Mill Factor, %							99.5			101.3			96.1			87.8		
Mill Index, %							100.2			102.7			96.1			92.3		

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE XI

SUMMARY OF INDIVIDUAL TEST LOTS--SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948--continued

te de	Mch. No.	Basis Weight, lb. Max.	Min.	Av.	Caliper, points Max.	Min.	Av.	Bursting Strength, points Max.	Min.	Av.	G. E. Puncture, units Max.	Min.	Av.	Elmendorf Tear, g./sheet In Max.	Min.	Av.	Across Max.	Min.	Av.
							Mill G — 42-lb. Linerboard												
1/48	1	43.6	42.0	42.8	14.1	12.2	13.0	127	89	110	36	32	34	400	320	357	416	336	374[a]
1/48	1	43.8	42.2	42.8	14.0	12.1	13.1	133	83	110	35	31	34	400	280	341[a]	432	328	373[a]
/48	1	44.0	42.0	42.9	14.4	12.2	13.6	138	88	108	36	32	34	400	328	369[a]	432	360	399[a]
0/48	1	45.6	44.0	44.7	14.2	12.7	13.3	137	83	116	38	34	36	384	304	357[a]	456	400	423[a]
5/48	1	44.6	43.0	43.6	15.4	14.2	14.9	135	101	117	38	34	36	456	368	417[a]	560	424	463[a]
---	1	44.0	42.2	43.4	16.0	14.5	15.0	138	106	121	42	34	37	440	336	391[a]	456	400	427[a]
2/48	1	44.0	42.0	43.1	14.1	13.0	13.7	130	100	114	36	32	34	456	368	420[a]	464	376	419[a]
4/48	1	44.0	42.0	43.0	15.0	13.2	14.1	130	90	108	38	32	35	416	352	384[a]	480	392	433[a]
				43.3			13.8			113			35			380			414
				42.9			15.0			105			39			378			411
				100.9			92.0			107.6			89.7			100.5			100.7
				100.5			92.0			109.7			89.7			98.4			99.3

TABLE XII

							Mill H - 42-lb. Linerboard												
4/48	3	46.0	42.0	43.6	15.2	14.0	14.7	121	77	104	43	32	37	464	352	396	552	336	428[a]
4/48	2	44.0	41.8	42.9	15.3	13.8	14.7	122	87	107	42	34	38	480	336	409[a]	464	400	426[a]
0/48	2	43.8	41.6	42.8	17.0	14.0	15.1	120	91	105	38	34	35	480	352	405[a]	456	368	411[a]
1/48	2	43.8	41.8	43.2	16.4	14.0	15.2	122	95	111	40	34	36	464	360	399[a]	456	400	423[a]
3/48	2	44.0	41.4	42.6	16.5	14.3	15.6	125	78	109	38	30	36	448	368	421[a]	488	368	437[a]
6/48	2	46.0	42.0	43.8	16.0	13.0	15.2	125	88	107	38	32	36	472	392	423[a]	488	352	421[a]
0/48	2	44.0	42.2	43.5	16.4	14.9	15.6	130	88	109	37	32	35	456	328	393[a]	536	384	429[a]
1/48	2	44.0	42.2	43.3	15.7	14.4	15.1	136	90	109	38	31	34	472	369	394	456	384	405[a]
				43.2			15.2			108			36			405			422
				43.2			15.4			104			39			404			426
				100.0			98.7			103.8			92.3			100.2			99.1
				100.2			101.3			104.9			92.3			104.9			101.2

he readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE XI

SUMMARY OF INDIVIDUAL TEST LOTS--SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948--continued

File No.	Mill Code	Date Recd.	Date Made	Mch. No.	Basis Weight, lb. Max.	Basis Weight, lb. Min.	Basis Weight, lb. Av.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Bursting Strength, points Max.	Bursting Strength, points Min.	Bursting Strength, points Av.	G. E. Puncture, units Max.	G. E. Puncture, units Min.	G. E. Puncture, units Av.	Elmendorf g./she In Max.	Elmendorf g./she In Min.	Elmendorf g./she In Av.
								Mill G — 42-lb. Linerboard											
133660	G-80	9/2/48	8/31/48	1	43.6	42.0	42.8	14.1	12.2	13.0	127	89	110	36	32	34	400	320	357
133661	G-81	9/2/48	8/31/48	1	43.8	42.2	42.8	14.0	12.1	13.1	133	83	110	35	31	34	400	280	341[a]
133736	G-82	9/13/48	9/7/48	1	44.0	42.0	42.9	14.4	12.2	13.6	138	88	108	36	32	34	400	328	369[a]
133737	G-83	9/13/48	9/10/48	1	45.6	44.0	44.7	14.2	12.7	13.3	137	83	116	38	34	36	384	304	357[a]
133798	G-84	9/20/48	9/15/48	1	44.6	43.0	43.6	15.4	14.2	14.9	135	101	117	38	34	36	456	368	417[a]
133799	G-85	9/20/48	------	1	44.0	42.2	43.4	16.0	14.5	15.0	138	106	121	42	34	37	440	336	391[a]
133888	G-86	9/27/48	9/22/48	1	44.0	42.0	43.1	14.1	13.0	13.7	130	100	114	36	32	34	456	368	420[a]
133889	G-87	9/27/48	9/24/48	1	44.0	42.0	43.0	15.0	13.2	14.1	130	90	108	38	32	35	416	352	384[a]
Current Mill Average:							43.3			13.8			113			35			380
Cumulative Mill Average:							42.9			15.0			105			39			378
Mill Factor, %							100.9			92.0			107.6			89.7			100.5
Mill Index, %							100.5			92.0			109.7			89.7			98.1

TABLE XII

								Mill H - 42-lb. Linerboard											
133645	H-65	9/1/48	8/24/48	3	46.0	42.0	43.6	15.2	14.0	14.7	121	77	104	43	32	37	464	352	396
133646	H-66	9/1/48	8/24/48	2	44.0	41.8	42.9	15.3	13.8	14.7	122	87	107	42	34	38	480	336	409[a]
133679	H-67	9/4/48	8/30/48	2	43.8	41.6	42.8	17.0	14.0	15.1	120	91	105	38	34	35	480	352	405[a]
133704	H-68	9/7/48	8/31/48	2	43.8	41.8	43.2	16.4	14.0	15.2	122	95	111	40	34	36	464	360	399[a]
133800	H-69	9/20/48	9/13/48	2	44.0	41.4	42.6	16.5	14.3	15.6	125	78	109	38	30	36	448	368	421[a]
133801	H-70	9/20/48	9/16/48	2	46.0	42.0	43.8	16.0	13.0	15.2	125	88	107	38	32	36	472	392	423[a]
133882	H-71	9/25/48	9/20/48	2	44.0	42.2	43.5	16.4	14.9	15.6	130	88	109	37	32	35	456	328	393[a]
133887	H-72	9/27/48	9/21/48	2	44.0	42.2	43.3	15.7	14.4	15.1	136	90	109	38	31	34	472	369	394
Current Mill Average:							43.2			15.2			108			36			405
Cumulative Mill Average:							43.2			15.4			104			39			404
Mill Factor, %							100.0			98.7			103.8			92.3			100.2
Mill Index, %							100.2			101.3			104.9			92.3			104.9

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE XIII

SUMMARY OF INDIVIDUAL TEST LOTS—SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948—continued

Mch. No.		Basis Weight, lb. Max.	Min.	Av.	Caliper, points Max.	Min.	Av.	Bursting Strength, points Max.	Min.	Av.	G. E. Puncture, units Max.	Min.	Av.	Elmendorf Tear, g./sheet In Max.	Min.	Av.	Across Max.	Min.	Av.
							Mill J — 42-lb. Linerboard												
8	1	43.8	42.0	42.8	13.1	11.1	12.4	126	88	108	33	28	30	384	280	319	392	320	359
8	1	44.0	41.0	42.5	13.7	11.2	12.6	126	87	105	32	26	29	384	200	299[a]	424	328	369[a]
8	-	42.8	40.6	41.5	13.0	11.1	12.1	122	86	105	30	26	28	360	272	311[a]	392	304	349[a]
8	1	41.0	38.0	40.0	13.9	12.4	13.1	116	70	95	30	26	28	360	240	308[a]	384	280	336[a]
48	1	42.0	40.0	41.5	14.6	12.4	13.2	122	78	107	30	26	28	376	208	295[a]	424	264	333[a]
48	1	41.8	40.0	41.0	15.0	14.0	14.5	124	82	103	30	26	28	384	264	319[a]	416	336	363[a]
48	1	42.6	40.4	41.8	16.0	14.0	15.2	119	76	95	30	26	28	440	304	363[a]	400	320	352[a]
48	1	44.0	42.0	43.0	15.0	13.1	14.1	117	81	101	30	27	28	384	304	331[a]	384	320	341[a]
				41.8			13.4			102			29			318			350
				42.9			14.7			105			34			351			380
				97.4			91.2			97.1			85.3			90.6			92.1
				97.0			89.3			99.0			74.4			82.4			83.9

TABLE XIV

							Mill E — 44/46-lb. Drum Linerboard												
8	1	48.4	47.4	47.9	15.1	13.7	14.1	112	86	98	45	38	41	576	376	459	512	416	457[a]
8	1	49.8	47.6	48.4	14.4	13.4	13.8	123	83	101	44	36	41	528	368	411[a]	496	384	447[a]
48	1	47.4	45.0	46.4	14.1	13.0	13.6	115	72	96	42	36	38	456	352	399[a]	488	368	424[a]
				47.6			13.8			98			40			423			443
				46.6			14.2			94			43			439			447
				102.1			97.2			104.3			93.0			96.4			99.1

readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE XIII

SUMMARY OF INDIVIDUAL TEST LOTS—SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948—continued

File No.	Mill Code	Date Recd.	Date Made	Mch. No.	Basis Weight, lb. Max.	Basis Weight, lb. Min.	Basis Weight, lb. Av.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Bursting Strength, points Max.	Bursting Strength, points Min.	Bursting Strength, points Av.	G. E. Puncture, units Max.	G. E. Puncture, units Min.	G. E. Puncture, units Av.	Elmendorf Tear, g/In Max.	Elmendorf Tear, g/In Min.	Elmendorf Tear, g/In Av.
								Mill J — 42-lb. Linerboard											
133705	J-69	9/7/48	9/1/48	1	43.8	42.0	42.8	13.1	11.1	12.4	126	88	108	33	28	30	384	280	3
133706	J-70	9/7/48	9/2/48	1	44.0	41.0	42.5	13.7	11.2	12.6	126	87	105	32	26	29	384	200	2
133733	J-71	9/11/48	9/8/48	-	42.8	40.6	41.5	13.0	11.1	12.1	122	86	105	30	26	28	360	272	3
133734	J-72	9/11/48	9/9/48	1	41.0	38.0	40.0	13.9	12.4	13.1	116	70	95	30	26	28	360	240	3
133802	J-73	9/20/48	9/16/48	1	42.0	40.0	41.5	14.6	12.4	13.2	122	78	107	30	26	28	376	208	2
133803	J-74	9/20/48	9/17/48	1	41.8	40.0	41.0	15.0	14.0	14.5	124	82	103	30	26	28	384	264	3
133890	J-75	9/27/48	9/23/48	1	42.6	40.4	41.8	16.0	14.0	15.2	119	76	95	30	26	28	440	304	3
133891	J-76	9/27/48	9/24/48	1	44.0	42.0	43.0	15.0	13.1	14.1	117	81	101	30	27	28	384	304	3
Current Mill Average:							41.8			13.4			102			29			3
Cumulative Mill Average:							42.9			14.7			105			34			3
Mill Factor, %							97.4			91.2			97.1			85.3			
Mill Index, %							97.0			89.3			99.0			74.4			

TABLE XIV

Mill E — 44/46-lb. Drum Linerboard

133703	E-37	9/7/48	9/2/48	1	48.4	47.4	47.9	15.1	13.7	14.1	112	86	98	45	38	41	576	376	4
133721	E-38	9/10/48	9/8/48	1	49.8	47.6	48.4	14.4	13.4	13.8	123	83	101	44	36	41	528	368	4
133774	E-39	9/17/48	9/14/48	1	47.4	45.0	46.4	14.1	13.0	13.6	115	72	96	42	36	38	456	352	3
Current Mill Average:							47.6			13.8			98			40			4
Cumulative Mill Average:							46.6			14.2			94			43			4
Mill Factor, %							102.1			97.2			104.3			93.0			

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

As a supplementary part of the Continuous Baseline Study, comparisons of the mill test results with those obtained at The Institute of Paper Chemistry on corresponding samples have been included in this report. As may be noted in Table XV, the atmospheric conditions used prior to and during the testing period varied considerably.

TABLE XV

Mill Code	Preconditioning R.H., %	Temp., °F.	Time	Conditioning R.H., %	Temp., °F.	Time
A	No preconditioning			59-75	84-90	-
B	40-68	78-90	1/2 hr.	50	70	24 hrs.
C	57-76	69-72	24-42 hrs.	64-80	68-70	4-1/2-48 hrs.
D	35-36	76-78	4-48 hrs.	57-58	76-78	16-48 hrs.
E	No samples submitted					
F	No preconditioning			No conditioning		
G	No preconditioning			No conditioning		
H	No preconditioning			50	73	24 hrs.
J	No preconditioning			50-74	78-89	-

A summary of the mill comparisons for the current period as compared with the previous period may be seen in Tables XVI and XVII, respectively. The comparison for the various mills is given in Tables XVIII to XXVI, inclusive, for the 42-lb. liner samples. A comparison of the special drum stock is given in Table XXVII. In all the comparisons given in Tables XVI to XVII, inclusive, the Institute's test values have been used as the reference line.

A comparison of the test data in Tables XVI and XVII indicates that in the majority of cases there is good agreement between the mill data and that of the Institute. As may be seen in Table XVII, the maximum variation in the average basis weight between the results of the Institute and those of a given mill on corresponding samples is 4% for the current period. In regard to caliper for the current period, the results for all mills are lower than those for the Institute, with the exception of Mill J which is slightly higher and Mill B which is the same. None of the differences appear to be significantly large. It may be observed on reviewing the bursting strength results that the average for Mills B, C, and D are higher than those for the Institute, whereas the remaining averages are lower. Only Mills A and F exhibit a significant difference. The G. E. puncture results for all mills are higher than the reference values, Mills A, C, F, and G having the greatest variation. The tear results appear to vary more widely than any of the other tests. Mills B, C, F, and J have the greatest variation for both in and across machine direction tear. The variation encountered for Mills C and F is exceptionally large.

The data in Table XVII also show the comparison of the average per cent differences between mill and Institute test results for the past three periods. It may be noted that the maximum variation in basis weight encountered during this time amounts to approximately 4%. The maximum average variation encountered in the basis weight results for the current period is commensurate with the variations for the preceding periods.

It may also be noted that the variations encountered in the caliper, bursting strength, G. E. puncture, and Elmendorf tear values for each mill for the current period are of the same general order of magnitude as for the previous period.

TABLE XVI

SUMMARY OF TEST RESULT COMPARISONS

Average Mill and Institute Results	Mills* A	B	C	D	E	F	G	H	J
No. Samples Compared	5	9	5	3	0	5	8	8	8
Basis Weight									
Institute	42.5	43.3	43.1	43.7	-	43.2	43.3	43.2	41.8
Mill	42.1	42.9	43.0	42.1	-	43.1	42.9	43.0	41.2
Av. difference**	-0.4	-0.4	-0.1	-1.6	-	-0.1	-0.4	-0.2	-0.6
Max. difference***	-1.2	-0.8	-0.5	-2.0	-	-0.8	-0.9	-0.7	-1.3
Caliper									
Institute	14.4	14.8	14.4	14.6	-	15.4	13.8	15.2	13.4
Mill	13.4	14.8	14.2	14.3	-	15.1	13.3	15.0	13.6
Av. difference**	-1.0	0.0	-0.2	-0.3	-	-0.3	-0.5	-0.2	+0.2
Max. difference***	-1.3	±0.3	-0.3	-0.6	-	-0.9	-0.8	-0.7	+1.0
Bursting Strength									
Institute	110	105	103	100	-	99	113	108	102
Mill	105	106	105	101	-	94	110	106	99
Av. difference**	-5	+1	+2	+1	-	-5	-3	-2	-3
Max. difference***	-8	+3	+4	-5	-	-8	-7	-6	-7
G. E. Puncture									
Institute	36	34	36	34	-	36	35	36	29
Mill	44	36	43	-	-	44	40	38	31
Av. difference**	+8	+2	+7	-	-	+8	+5	+2	+2
Max. difference***	+10	+4	+9	-	-	+10	+6	+4	+5
Tearing Strength, in									
Institute	393	377	357	392	-	353	380	405	318
Mill	411	344	399	374	-	388	401	387	344
Av. difference**	+18	-33	+42	-18	-	+35	+21	-18	+26
Max. difference***	+49	-54	+69	-28	-	+49	+67	-60	+74
Tearing Strength, across									
Institute	439	404	428	403	-	408	414	422	350
Mill	463	380	483	421	-	480	432	425	382
Av. difference**	+24	-24	+55	+18	-	+72	+18	+3	+32
Max. difference***	+45	-38	+81	+34	-	+88	+66	+29	+66

* Comparison based on averages involves only those samples on which mill test data were submitted.

** Average difference is the difference between the Institute mill average and the mill average based on mill test data.

*** Maximum difference encountered in comparing the Institute average and the mill average for any sample submitted by that particular mill.

TABLE XVII

SUMMARY OF TEST RESULTS—COMPARISON BY PERIODS

	Average Difference, per cent					
	Basis Weight	Caliper	Bursting Strength	G. E. Puncture	Tearing Strength, In	Tearing Strength, Across
Mill A						
Current period	-0.9	-7	-5	+22	+5	+5
14th period	-0.2	-1	-4	+21	+11	+7
13th period	-0.9	-2	+1	+13	+10	+8
Mill B						
Current period	-0.9	0	+1	+6	-9	-6
14th period	-1	+2	+3	0	-8	-8
13th period	-0.2	+1	+5	-8	-12	-9
Mill C						
Current period	-0.2	-1	+2	+19	+12	+13
14th period	-1	-1	+6	+13	+9	+15
13th period	-0.2	-1	+3	+8	+12	+9
Mill D						
Current period	-4	-2	+1	-	-5	+4
14th period	+1	-0.7	0	-	-8	-2
13th period	-	-	-	-	-	-
Mill E						
Current period	-	-	-	-	-	-
14th period	-	-	-	-	-	-
13th period	-	-	-	-	-	-
Mill F						
Current period	-0.2	-2	-5	+22	+10	+18
14th period	-0.2	-3	-1	+13	+12	+23
13th period	-0.5	-2	-2	+7	+38	+45
Mill G						
Current period	-0.9	-4	-3	+14	+6	+4
14th period	-0.5	-2	-4	+5	+5	+2
13th period	0	-2	-3	+8	+4	+3
Mill H						
Current period	-0.5	-1	-2	+6	-4	+0.7
14th period	+0.9	0	-1	0	-5	+0.7
13th period	+0.5	-1	0	-3	-2	-1
Mill J						
Current period	-1	+1	-3	+7	+8	+9
14th period	-0.2	+0.7	-5	+10	+15	+20
13th period	-1	0	-2	+3	+9	+14

TABLE XVIII

SUMMARY OF INDIVIDUAL TEST LOTS--SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948

Institute data versus Mill Data

Basis Weight, lb.			Caliper, points			Bursting Strength, points			G. E. Puncture, units			Elmendorf Tear, g./sheet					
												In			Across		
IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
Mill A — 42-lb. Linerboard																	
42.0	41.8	-0.2	13.8	12.8	-1.0	110	104	-6	36	45	+9	380	429	+49	439[a]	483	+44
43.2	42.0	-1.2	14.2	13.1	-1.1	113	105	-8	37	45	+8	411	440	+29	465[a]	482	+17
42.0	42.1	+0.1	14.7	13.4	-1.3	105	106	+1	35	45	+10	387	400	+13	439[a]	453	+14
43.2	42.9	-0.3	14.5	13.7	-0.8	110	105	-5	36	46	+10	382[a]	415	+33	423[a]	468	+45
42.1	41.8	-0.3	14.7	14.1	-0.6	110	106	-4	35	42	+7	404[a]	370	-34	429[a]	427	-2
42.5	42.1	-0.4	14.4	13.4	-1.0	110	105	-5	36	44	+8	393	411	+18	439	463	+24

TABLE XIX

Mill B — 42-lb. Linerboard																	
43.3	42.7	-0.6	15.0	15.0	0.0	107	106	-1	32	35	+3	365[a]	329	-36	373[a]	367	-6
43.5	43.1	-0.4	14.4	14.5	+0.1	103	104	+1	35	37	+2	353[a]	337	-16	407[a]	387	-20
43.3	42.5	-0.8	14.9	14.6	-0.3	105	108	+3	35	36	+1	370	356	-14	421[a]	393	-28
41.8	42.0	+0.2	13.8	13.9	+0.1	106	107	+1	34	37	+3	369	347	-22	399[a]	390	-9
43.8	43.2	-0.6	15.1	15.1	0.0	104	106	+2	34	37	+3	393	354	-39	413[a]	375	-38
44.0	43.5	-0.5	14.7	15.0	+0.3	104	105	+1	32	36	+4	369[a]	335	-34	409[a]	383	-26
43.3	43.5	+0.2	14.6	14.9	+0.3	106	108	+2	36	38	+2	422[a]	369	-53	417[a]	381	-36
43.6	43.2	-0.4	15.6	15.5	-0.1	102	104	+2	35	37	+2	403[a]	349	-54	403[a]	379	-24
42.7	42.4	-0.3	14.8	14.7	-0.1	105	105	0	31	34	+3	351	324	-27	394[a]	365	-29
43.3	42.9	-0.4	14.8	14.8	0.0	105	106	+1	34	36	+2	377	344	-33	404	380	-24

[a] adings for one or more specimens which tore beyond the 3/8-inch limit.

[b] e" data are calculated from the totals of the individual readings.

TABLE XVIII

SUMMARY OF INDIVIDUAL TEST LOTS--SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948

Institute data versus Mill Data

File No.	Mill Code	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, points			G. E. Puncture, units			Elmend... g./...		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	In Mill	Diff.
									Mill A — 42-lb. Linerboard									
133668	A-67	8/30/48	1	42.0	41.8	-0.2	13.8	12.8	-1.0	110	104	-6	36	45	+9	380	429	+49
133680	A-68	9/1/48	1	43.2	42.0	-1.2	14.2	13.1	-1.1	113	105	-8	37	45	+8	411	440	+29
133759	A-69	9/13/48	1	42.0	42.1	+0.1	14.7	13.4	-1.3	105	106	+1	35	45	+10	387	400	+13
133787	A-70	9/15/48	1	43.2	42.9	-0.3	14.5	13.7	-0.8	110	105	-5	36	46	+10	382[a]	415	+33
133834	A-71	9/20/48	1	42.1	41.8	-0.3	14.7	14.1	-0.6	110	106	-4	35	42	+7	404[a]	370	-34
Current Mill Average:				42.5	42.1	-0.4	14.4	13.4	-1.0	110	105	-5	36	44	+8	393	411	+18

TABLE XIX

									Mill B — 42-lb. Linerboard									
133647	B-92	8/23/48	1	43.3	42.7	-0.6	15.0	15.0	0.0	107	106	-1	32	35	+3	365[a]	329	-36
133648	B-93	8/23/48	3	43.5	43.1	-0.4	14.4	14.5	+0.1	103	104	+1	35	37	+2	353[a]	337	-16
133698	B-94	8/31/48	3	43.3	42.5	-0.8	14.9	14.6	-0.3	105	108	+3	35	36	+1	370	356	-14
133699	B-95	9/1/48	3	41.8	42.0	+0.2	13.8	13.9	+0.1	106	107	+1	34	37	+3	369	347	-22
133700	B-96	9/1/48	1	43.8	43.2	-0.6	15.1	15.1	0.0	104	106	+2	34	37	+3	393	354	-39
133775	B-97	9/8/48	3	44.0	43.5	-0.5	14.7	15.0	+0.3	104	105	+1	32	36	+4	369[a]	335	-34
133776	B-98	9/9/48	3	43.3	43.5	+0.2	14.6	14.9	+0.3	106	108	+2	36	38	+2	422[a]	369	-53
133789	B-99	9/9/48	1	43.6	43.2	-0.4	15.6	15.5	-0.1	102	104	+2	35	37	+2	403[a]	349	-54
133886	B-100	9/15/48	3	42.7	42.4	-0.3	14.8	14.7	-0.1	105	105	0	31	34	+3	351	324	-27
Current Mill Average:				43.3	42.9	-0.4	14.8	14.8	0.0	105	106	+1	34	36	+2	377	344	-33

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XX

SUMMARY OF INDIVIDUAL TEST LOTS--SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948

Institute Data versus Mill Data

Basis Weight, lb.			Caliper, points			Bursting Strength, points			G. E. Puncture, units			Elmendorf Tear, g./sheet					
												In			Across		
IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
Mill C — 42-lb. Linerboard																	
43.5	43.5	0.0	14.0	14.1	+0.1	106	106	0	36	43	+7	364	415	+51	437[a]	518	+81
41.9	41.7	-0.2	13.9	13.8	-0.1	97	101	+4	35	44	+9	345	362	+17	424[a]	438	+14
44.2	44.2	0.0	14.4	14.2	-0.2	102	106	+4	36	45	+9	359[a]	401	+42	425[a]	505	+80
41.6	41.8	+0.2	14.5	14.2	-0.3	100	103	+3	35	40	+5	355[a]	385	+30	416[a]	475	+59
44.3	43.8	-0.5	15.1	14.8	-0.3	109	107	-2	38	44	+6	361	430	+69	439[a]	479	+40
43.1	43.0	-0.1	14.4	14.2	-0.2	103	105	+2	36	43	+7	357	399	+42	428	483	+55

TABLE XXI

Mill D — 42-lb. Linerboard

44.1	42.1	-2.0	14.5	14.3	-0.2	98	100	+2	34			370[a]	361	-9	398[a]	390	-8
42.9	41.7	-1.2	14.3	13.7	-0.6	96	100	+4	34			387[a]	370	-17	383[a]	408	+25
44.2	42.5	-1.7	15.1	15.0	-0.1	107	102	-5	35			419[a]	391	-28	429[a]	463	+34
43.7	42.1	-1.6	14.6	14.3	-0.3	100	101	+1	34			392	374	-18	403	421	+18

TABLE XXII

Mill E — 42-lb. Linerboard (No samples submitted)

TABLE XXIII

Mill F — 42-lb. Linerboard

42.6	42.9	+0.3	15.5	15.5	0.0	95	94	-1	37	46	+9	369	380	+11	401[a]	489	+88
42.9	43.0	+0.1	15.6	15.6	0.0	94	90	-4	36	46	+10	348[a]	375	+27	403[a]	477	+74
44.0	44.2	+0.2	15.8	15.9	+0.1	94	86	-8	35	45	+10	326[a]	373	+47	409[a]	476	+67
43.0	42.2	-0.8	14.9	14.2	-0.7	107	102	-5	35	42	+7	354	398	+44	411	477	+66
43.4	43.3	-0.1	15.4	14.5	-0.9	104	96	-8	36	43	+7	367[a]	416	+49	417[a]	479	+62
43.2	43.1	-0.1	15.4	15.1	-0.3	99	94	-5	36	44	+8	353	388	+35	408	480	+72

adings for one or more specimens which tore beyond the 3/8-inch limit.

ge" data are calculated from the totals of the individual readings.

TABLE XX

SUMMARY OF INDIVIDUAL TEST LOTS--SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948

Institute Data versus Mill Data

File No.	Mill Code	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, points			G. E. Puncture, units			Elmendorf g./she		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	In Mill	Diff.
Mill C — 42-lb. Linerboard																		
133701	C-62	8/31/48	1	43.5	43.5	0.0	14.0	14.1	+0.1	106	106	0	36	43	+7	364	415	+51
133702	C-63	9/2/48	1	41.9	41.7	-0.2	13.9	13.8	-0.1	97	101	+4	35	44	+9	345	362	+17
133788	C-64	9/13/48	1	44.2	44.2	0.0	14.4	14.2	-0.2	102	106	+4	36	45	+9	359[a]	401	+42
133883	C-65	9/20/48	1	41.6	41.8	+0.2	14.5	14.2	-0.3	100	103	+3	35	40	+5	355[a]	385	+30
133901	C-66	9/23/48	1	44.3	43.8	-0.5	15.1	14.8	-0.3	109	107	-2	38	44	+6	361	430	+69
Current Mill Average:				43.1	43.0	-0.1	14.4	14.2	-0.2	103	105	+2	36	43	+7	357	399	+42
TABLE XXI																		
Mill D — 42-lb. Linerboard																		
133667	D-39	8/30/48	4	44.1	42.1	-2.0	14.5	14.3	-0.2	98	100	+2	34			370[a]	361	-9
133832	D-40	9/18/48	4	42.9	41.7	-1.2	14.3	13.7	-0.6	96	100	+4	34			387[a]	370	-17
133833	D-41	9/19/48	4	44.2	42.5	-1.7	15.1	15.0	-0.1	107	102	-5	35			419[a]	391	-28
Current Mill Average:				43.7	42.1	-1.6	14.6	14.3	-0.3	100	101	+1	34			392	374	-18
TABLE XXII																		
Mill E — 42-lb. Linerboard (No samples submitted)																		
TABLE XXIII																		
Mill F — 42-lb. Linerboard																		
133649	F-52	8/28/48	-	42.6	42.9	+0.3	15.5	15.5	0.0	95	94	-1	37	46	+9	369	380	+11
133650	F-53	8/28/48	-	42.9	43.0	+0.1	15.6	15.6	0.0	94	90	-4	36	46	+10	348[a]	375	+27
133735	F-54	8/30/48	-	44.0	44.2	+0.2	15.8	15.9	+0.1	94	86	-8	35	45	+10	326[a]	373	+47
133804	F-55	9/11/48	-	43.0	42.2	-0.8	14.9	14.2	-0.7	107	102	-5	35	42	+7	354	398	+44
133805	F-56	9/11/48	-	43.4	43.3	-0.1	15.4	14.5	-0.9	104	96	-8	36	43	+7	367[a]	416	+49
Current Mill Average:				43.2	43.1	-0.1	15.4	15.1	-0.3	99	94	-5	36	44	+8	353	388	+35

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXIV

SUMMARY OF INDIVIDUAL TEST LOTS--SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948

Institute Data versus Mill Data

eight,		Caliper, points			Bursting Strength, points			G. E. Puncture, units			Elmendorf Tear, g/sheet					
											In			Across		
l	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
					Mill G — Linerboard											
.9	+0.1	13.0	12.4	-0.6	110	113	+3	34	39	+5	357	388	+31	374[a]	418	+44
.5	-0.3	13.1	13.0	-0.1	110	106	-4	34	40	+6	341[a]	408	+67	373[a]	439	+66
.6	-0.3	13.6	12.8	-0.8	108	105	-3	34	37	+3	369[a]	393	+24	399[a]	433	+34
.4	-0.3	13.3	13.3	0.0	116	113	-3	36	42	+6	357[a]	402	+45	423[a]	452	+29
.8	-0.8	14.9	14.5	-0.4	117	110	-7	36	41	+5	417[a]	405	-12	463[a]	437	-26
.5	-0.9	15.0	14.2	-0.8	121	117	-4	37	41	+4	391[a]	402	+11	427[a]	437	+10
.3	+0.2	13.7	13.0	-0.7	114	108	-6	34	38	+4	420[a]	405	-15	419[a]	421	+2
.5	-0.5	14.1	13.4	-0.7	108	104	-4	35	40	+5	384[a]	403	+19	433[a]	423	-10
.9	-0.4	13.8	13.3	-0.5	113	110	-3	35	40	+5	380	401	+21	414	432	+18

TABLE XXV

Mill H — 42-lb. Linerboard

.5	-0.1	14.7	14.8	+0.1	104	107	+3	37	39	+2	396	369	-27	428[a]	401	-27
.0	+0.1	14.7	15.2	+0.5	107	107	0	38	39	+1	409[a]	397	-12	426[a]	436	+10
.2	+0.4	15.1	15.1	0.0	105	106	+1	35	39	+4	405[a]	386	-19	411[a]	438	+27
.7	-0.5	15.2	15.1	-0.1	111	105	-6	36	37	+1	399[a]	391	-8	423[a]	429	+6
.6	0.0	15.6	14.9	-0.7	109	104	-5	36	39	+3	421[a]	392	-29	437[a]	425	-12
.3	-0.5	15.2	14.8	-0.4	107	103	-4	36	39	+3	423[a]	363	-60	421[a]	395	-26
.9	-0.6	15.6	14.9	-0.7	109	106	-3	35	37	+2	393[a]	409	+16	429[a]	439	+10
.6	-0.7	15.1	14.9	-0.2	109	108	-1	34	36	+2	394	388	-6	405[a]	434	+29
.0	-0.2	15.2	15.0	-0.2	108	106	-2	36	38	+2	405	387	-18	422	425	+3

for one or more specimens which tore beyond the 3/8-inch limit.

are calculated from the totals of the individual readings.

TABLE XXIV

SUMMARY OF INDIVIDUAL TEST LOTS--SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948

Institute Data versus Mill Data

File No.	Mill Code	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, points			G. E. Puncture, units			Elmendorf Te g/sheet			
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	In Mill	Diff.	IP
									Mill G — Linerboard										
133660	G-80	8/31/48	1	42.8	42.9	+0.1	13.0	12.4	-0.6	110	113	+3	34	39	+5	357	388	+31	37
133661	G-81	8/31/48	1	42.8	42.5	-0.3	13.1	13.0	-0.1	110	106	-4	34	40	+6	341[a]	408	+67	37
133736	G-82	9/7/48	1	42.9	42.6	-0.3	13.6	12.8	-0.8	108	105	-3	34	37	+3	369[a]	393	+24	39
133737	G-83	9/10/48	1	44.7	44.4	-0.3	13.3	13.3	0.0	116	113	-3	36	42	+6	357[a]	402	+45	42
133798	G-84	9/15/48	1	43.6	42.8	-0.8	14.9	14.5	-0.4	117	110	-7	36	41	+5	417[a]	405	-12	46
133799	G-85	-------	1	43.4	42.5	-0.9	15.0	14.2	-0.8	121	117	-4	37	41	+4	391[a]	402	+11	42
133888	G-86	9/22/48	1	43.1	43.3	+0.2	13.7	13.0	-0.7	114	108	-6	34	38	+4	420[a]	405	-15	43
133889	G-87	9/24/48	1	43.0	42.5	-0.5	14.1	13.4	-0.7	108	104	-4	35	40	+5	384[a]	403	+19	43
Current Mill Average:				43.3	42.9	-0.4	13.8	13.3	-0.5	113	110	-3	35	40	+5	380	401	+21	41

TABLE XXV

									Mill H — 42-lb. Linerboard										
133645	H-65	8/24/48	3	43.6	43.5	-0.1	14.7	14.8	+0.1	104	107	+3	37	39	+2	396	369	-27	42
133646	H-66	8/24/48	2	42.9	43.0	+0.1	14.7	15.2	+0.5	107	107	0	38	39	+1	409[a]	397	-12	42
133679	H-67	8/30/48	2	42.8	43.2	+0.4	15.1	15.1	0.0	105	106	+1	35	39	+4	405[a]	336	-19	43
133704	H-68	8/31/48	2	43.2	42.7	-0.5	15.2	15.1	-0.1	111	105	-6	36	37	+1	399[a]	391	-8	42
133800	H-69	9/13/48	2	42.6	42.6	0.0	15.6	14.9	-0.7	109	104	-5	36	39	+3	421[a]	392	-29	42
133801	H-70	9/16/48	2	43.8	43.3	-0.5	15.2	14.8	-0.4	107	103	-4	36	39	+3	423[a]	363	-60	42
133882	H-71	9/20/48	2	43.5	42.9	-0.6	15.6	14.9	-0.7	109	106	-3	35	37	+2	393[a]	409	+16	42
133887	H-72	9/21/48	2	43.3	42.6	-0.7	15.1	14.9	-0.2	109	108	-1	34	36	+2	394	388	-6	40
Current Mill Average:				43.2	43.0	-0.2	15.2	15.0	-0.2	108	106	-2	36	38	+2	405	387	-18	42

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXVI

SUMMARY OF INDIVIDUAL TEST LOTS—SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948

Institute Data versus Mill Data

Basis Weight, lb.			Caliper, points			Bursting Strength, points			G. E. Puncture, units			Elmendorf Tear, g./sheet					
												In			Across		
IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
Mill J — 42-lb. Linerboard																	
42.8	42.0	-0.8	12.4	12.7	+0.3	108	108	0	30	32	+2	319	315	-4	359	373	+14
42.5	41.9	-0.6	12.6	12.8	+0.2	105	105	0	29	31	+2	299[a]	363	+64	369[a]	379	+10
41.5	41.1	-0.4	12.1	12.5	+0.4	105	100	-5	28	32	+4	311[a]	359	+48	349[a]	407	+58
40.0	39.7	-0.3	13.1	13.2	+0.1	95	91	-4	28	32	+4	308[a]	355	+47	336[a]	387	+51
41.5	40.8	-0.7	13.2	13.1	-0.1	107	100	-7	28	29	+1	295[a]	313	+18	333[a]	334	+1
41.0	41.5	+0.5	14.5	14.6	+0.1	103	100	-3	28	33	+5	319[a]	393	+74	363[a]	426	+63
41.8	40.7	-1.1	15.2	14.9	-0.3	95	88	-7	28	30	+2	363[a]	307	-56	352[a]	345	-7
43.0	41.7	-1.3	14.1	15.1	+1.0	101	96	-5	28	32	+4	331[a]	347	+16	341[a]	407	+66
41.8	41.2	-0.6	13.4	13.6	+0.2	102	99	-3	29	31	+2	318	344	+26	350	382	+32

TABLE XXVII

Mill E — 44/46-lb. Drum Linerboard

47.9	47.5	-0.4	14.1	14	-0.1	98	98	0	41	40	-1	459	463	+4	457[a]	479	+22
48.4	48.4	0.0	13.8	14.1	+0.3	101	100	-1	41	43	+2	411[a]	517	+106	447[a]	566	+119
46.4	47.3	+0.9	13.6	13.4	-0.2	96	103	+7	38	40	+2	399[a]	453	+54	424[a]	463	+39
47.6	47.7	+0.1	13.8	13.8	0.0	98	100	+2	40	41	+1	423	478	+55	443	503	+60

eadings for one or more specimens which tore beyond the 3/8-inch limit.

rage" data are calculated from the totals of the individual readings.

TABLE XXVI

SUMMARY OF INDIVIDUAL TEST LOTS--SEPTEMBER 1 THROUGH SEPTEMBER 30, 1948

Institute Data versus Mill Data

File No.	Mill Code	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, points			G. E. Puncture, units			Elmendorf Tea g./sheet			
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	In Mill	Diff.	IPC
										Mill J — 42-lb. Linerboard									
133705	J-69	9/1/48	1	42.8	42.0	-0.8	12.4	12.7	+0.3	108	108	0	30	32	+2	319	315	-4	359
133706	J-70	9/2/48	1	42.5	41.9	-0.6	12.6	12.8	+0.2	105	105	0	29	31	+2	299[a]	363	+64	369
133733	J-71	9/8/48	-	41.5	41.1	-0.4	12.1	12.5	+0.4	105	100	-5	28	32	+4	311[a]	359	+48	349
133734	J-72	9/9/48	1	40.0	39.7	-0.3	13.1	13.2	+0.1	95	91	-4	28	32	+4	308[a]	355	+47	336
133802	J-73	9/16/48	1	41.5	40.8	-0.7	13.2	13.1	-0.1	107	100	-7	28	29	+1	295[a]	313	+18	333
133803	J-74	9/17/48	1	41.0	41.5	+0.5	14.5	14.6	+0.1	103	100	-3	28	33	+5	319[a]	393	+74	363
133890	J-75	9/23/48	1	41.8	40.7	-1.1	15.2	14.9	-0.3	95	88	-7	28	30	+2	363[a]	307	-56	352
133891	J-76	9/24/48	1	43.0	41.7	-1.3	14.1	15.1	+1.0	101	96	-5	28	32	+4	331[a]	347	+16	341
Current Mill Average:				41.8	41.2	-0.6	13.4	13.6	+0.2	102	99	-3	29	31	+2	318	344	+26	350

TABLE XXVII

										Mill E — 44/46-lb. Drum Linerboard									
133703	E-37	9/2/48	1	47.9	47.5	-0.4	14.1	14	-0.1	98	98	0	41	40	-1	459	463	+4	457
133721	E-38	9/8/48	1	48.4	48.4	0.0	13.8	14.1	+0.3	101	100	-1	41	43	+2	411[a]	517	+106	447
133774	E-39	9/14/48	1	46.4	47.3	+0.9	13.6	13.4	-0.2	96	103	+7	38	40	+2	399[a]	453	+54	424
Current Mill Average:				47.6	47.7	+0.1	13.8	13.8	0.0	98	100	+2	40	41	+1	423	478	+55	443

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Notes: All "current mill average" data are calculated from the totals of the individual readings.